Internet Appendix

A.   Variable Definitions

- *ASSETS* = atq

- *AVERAGE_ASSETS* = ((ASSETS) + (LAGGED_ASSETS))/2

- *MARKET_VALUE* = prccq×cshoq - (atq -ltq + txditcq) + atq

- *MARKET-TO-BOOK* = (MARKET_VALUE)/(ASSETS)

- *TOTAL_DEBT* = dltcq + dlttq

- *LEVERAGE* = (TOTAL_DEBT)/(ASSETS)

- *MACRO Q* = (prccq×cshoq+dlttq+dlcq-invtq)/lagged ppentq

- *NET_WORTH* = atq - ltq

- *TANGIBLE_NET_WORTH* = actq + ppentq + aoq - ltq

- *CURRENT_RATIO* = actq/lctq

- *CASH* = cheq/(atq)

- *PROFITABILITY* = oibdpq/(AVERAGE_ASSETS)

- *INTEREST_EXPENSE* = xintq/(AVERAGE_ASSETS)

- *CAPEX_QUARTERLY* = capxy adjusted for fiscal quarter accumulation

- *CAPEX* = CAPEX_QUARTERLY/(AVERAGE_ASSETS)

- *INVESTMENT* = CAPEX_QUARTERLY/(Lagged ppentq)

- *SYNDICATE_SIZE* = The number of lenders at loan syndication.

- *RELATIONSHIP_STRENGTH* = The number of loans to borrower i by bank m scaled by the total number of loans to the borrower made in the past five years.

- *LEAD_SHARE* = Share of the syndicated loan amount contributed by the lead lender. Loan shares are missing for many deals in Dealscan. Thus, loan shares are imputed following Chodorow-Reich (2013) by using the average loan share retained by lead lenders and participants in deals with the same syndicate structure.

- *LOAN_TYPE* = Loans are classified as (a) *Revolvers:* if the LoanType field in Dealscan consists of *Revolver*, *364-Day*, *Demand Loan*, or *Limited Line*; (b) *Term loan:* if the LoanType field in Dealscan consists of *Term Loan*, *Term Loan A*, *Term Loan B* to *Term Loan E*.

- *INITIAL_COVENANT_TIGHTNESS* = The negative of the relative covenant distance at loan initiation (i.e., $-\frac{Ratio - CovenantThresholdRatio}{CovenantThresholdRatio}$). In case both, net worth and current ratio covenants are present, the tighter of the two covenants is chosen. Initial covenant tightness is updated when a firm initiates a new loan with its lead lender.

- *DISTANCE-TO-DEFAULT* = Is a measure of default risk based on the structural credit risk model of Merton (1974). It is computed from observed stock prices and book leverage using the iterative method described in Bharath and Shumway (2008).

- *CDS_ILLIQUIDITY* = Quarterly average of the following daily values: $\sqrt{\frac{|\Delta \text{CDS spread}|}{\text{Number of CDS dealer quotes}}}$

# B. Identifying amended and renegotiated loans

We use the Dealscan Facility Amendment dataset to identify a firm's loan facilities that were amended after the firm's covenant violation. If we find an amended loan facility within one year of the covenant violation date, then we classify that covenant violation to be associated with lender intervention.

However, the loan amendment dataset in dealscan has limitations. The loan amendment dataset in Dealscan mainly consists of amendments which require a majority (51%) of lenders to agree to the amendment (see Roberts (2015) for more details). Often when the decision among lenders to restructure or refinance a given loan is unanimous, then the loan is entered as a *new* loan as opposed to an amended loan in Dealscan (Roberts (2015)).

We next identify such renegotiated loan facilities that were entered as new loan facilities using the following the steps. We first identify all the loan facilities within the packages that were affected by the net worth or current ratio covenant violations. We refer to these as the affected loan facilities. Recall that the net worth and current ratio covenants, and their corresponding loan packages were identified by following the procedure in Chava and Roberts (2008). Next, for every affected loan, we identify a new loan facility in the post covenant violation period such that its loan issuance date is before the maturity of the affected loan and within one year of the covenant violation date. We further ensure that the affected loan and its matched new loan are made to the same firm by the same lead lender and are of the same type (e.g., term loans, revolvers). If we are able to identify such renegotiated loans for a covenant-violating firm, then we classify that covenant violation to associated with lender intervention.

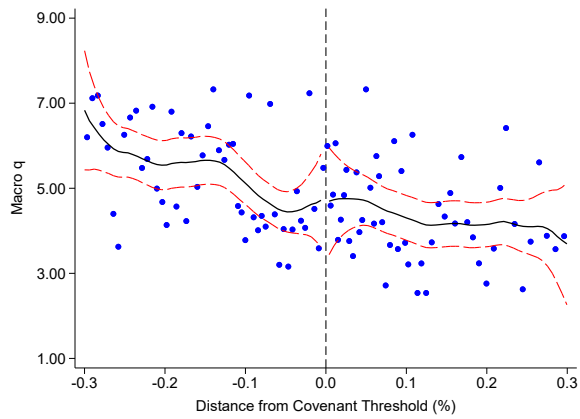**Figure IA.1: Continuity of firm covariates: CDS vs non-CDS firms**

This figure plots firm characteristics, such as investment opportunities (market-to-book and macro q), assets, leverage, and cash versus the distance to covenant violation.
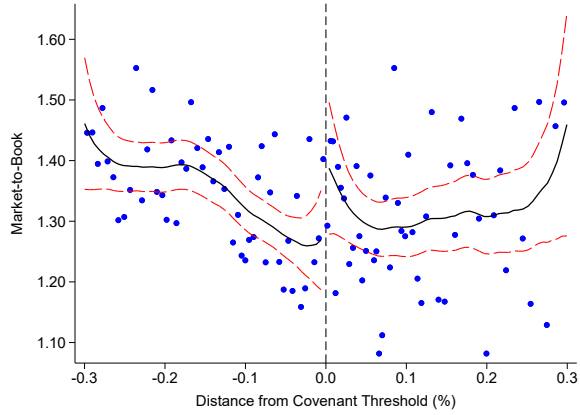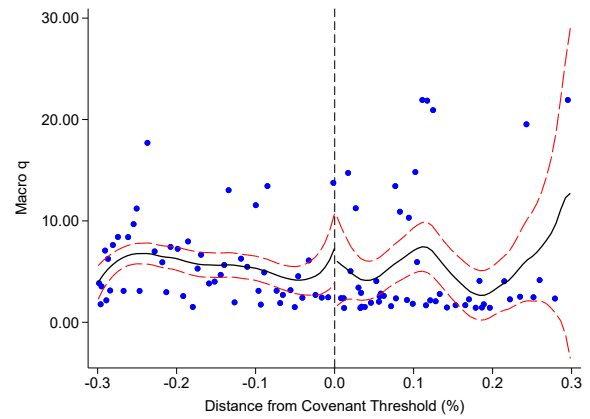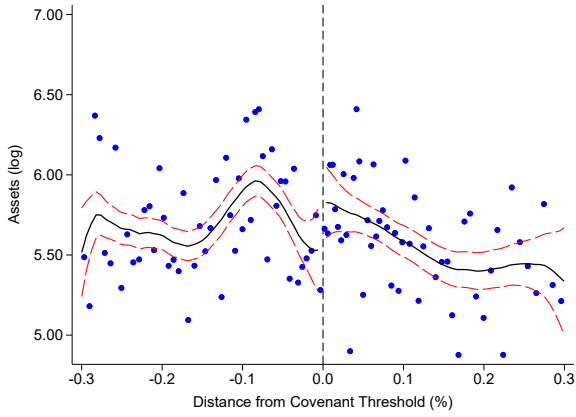

(a) **Market-to-book: Non-CDS firms**
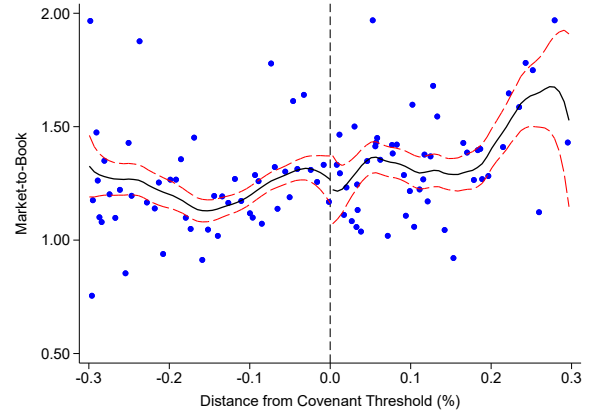
(b) **Market-to-book: CDS firms**

(c) **Macro q: Non-CDS firms**

(d) **Macro q: CDS firms**

(e) Assets (log): Non-CDS firms
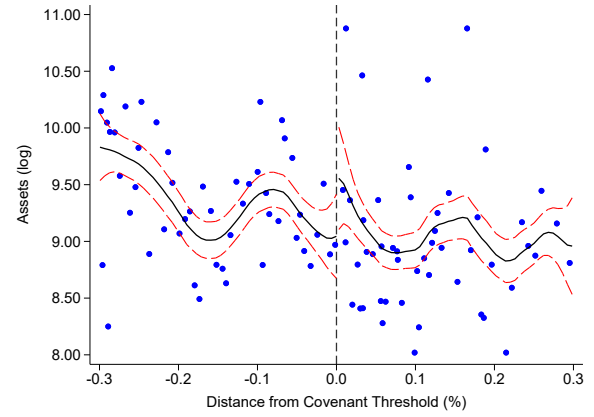
(f) Assets (log): CDS firms
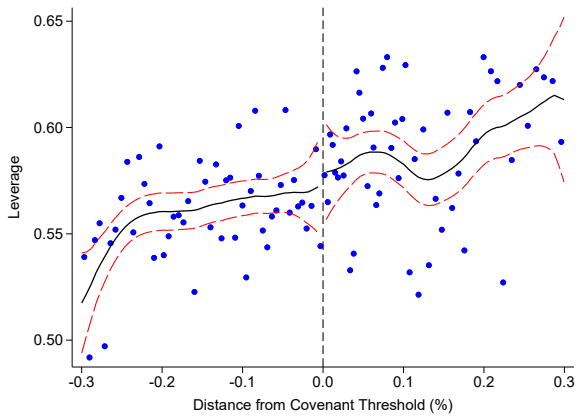
(g) Leverage: Non-CDS firms
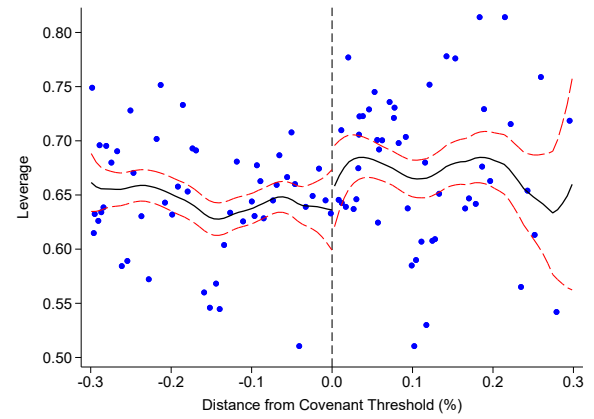
(h) Leverage: CDS firms
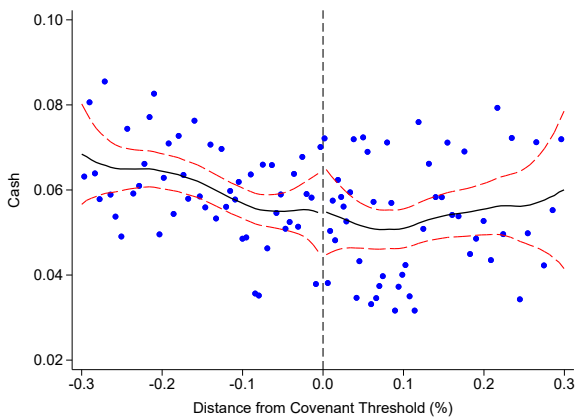
(q) Cash: Non-CDS firms
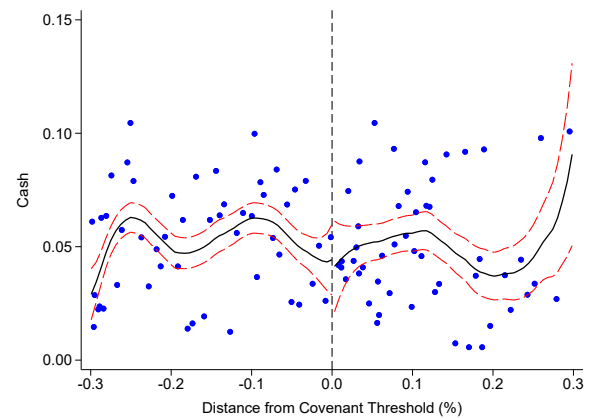
(r) Cash: CDS firms

Figure IA.2: Density of distance-to-violation around the covenant violation threshold

This figure plots the density of the distance-to-violation around the covenant violation threshold. We define bins of equal width for the distance-to-violation on each side of the covenant threshold and compute the normalized frequency of observations in each bin. The blue solid circles display the frequency of observations in each bin, and the black solid line fits a nonparametric local linear polynomial using a triangular kernel within a bandwidth of 0.3 around the covenant threshold. The red long-dashed lines show the 95% confidence intervals.
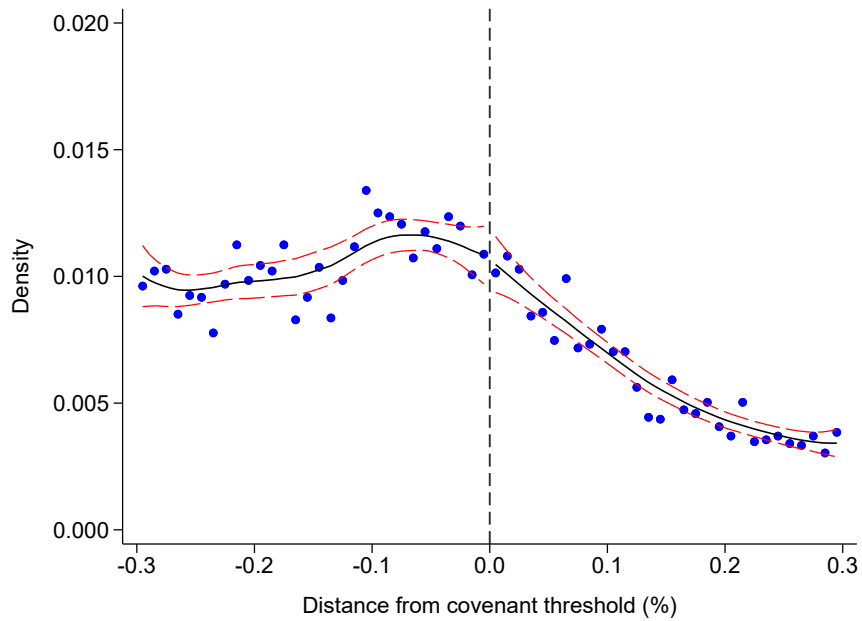
(a) Absence of CDS trading
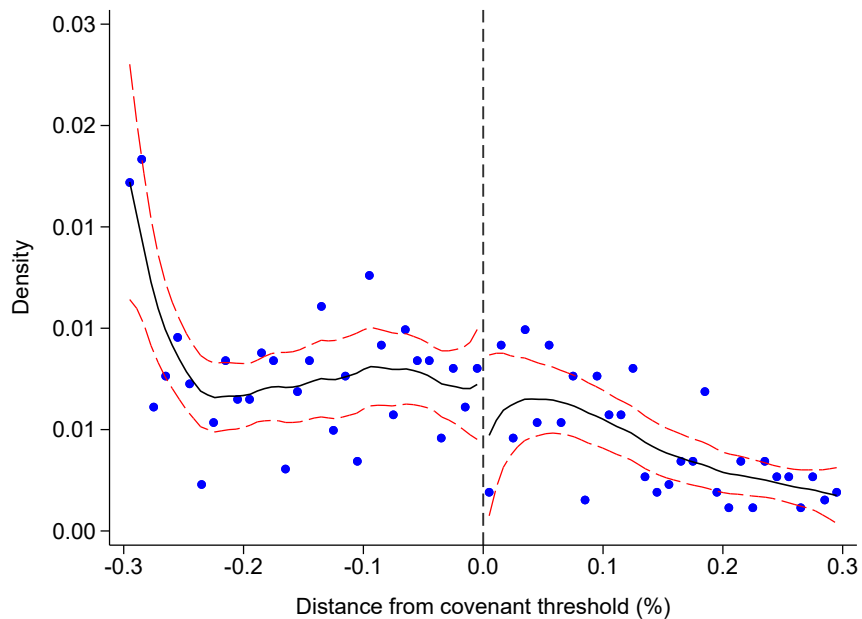
(b) Presence of CDS trading

Table IA.1: Loan characteristics of firms with and without CDS trading

This table provides the summary statistics (mean, (median)) for the covenant violation sample. The sample period is from 1996–2020. The data consist of nonfinancial firms that have violated the current ratio or the net worth covenant at least once during the sample period.

Panel A: Loan characteristics

	CDS Firms	Non-CDS Firms
Syndicate characteristics		
NUMBER_OF_LEAD_LENDERS	1.773	1.129
	(1.000)	(1.000)
SYNDICATE_SIZE	13.895	3.794
	(13.000)	(1.000)
RELATIONSHIP (D)	0.503	0.329
	(1.000)	(0.000)
Loan terms		
LOAN_SIZE ($ MILLIONS)	703.740	99.095
	(500.000)	(25.000)
MATURITY	43.098	41.880
	(48.000)	(36.000)
ALL-IN-DRAWN_SPREAD (BP)	139.421	242.303
	(125.000)	(230.000)
ALL-IN-UNDRAWN_SPREAD (BP)	26.250	36.574
	(20.000)	(37.500)
REVOLVER (D)	0.824	0.688
	(1.000)	(1.000)
TERM_LOAN (D)	0.181	0.304
	(0.000)	(0.000)
INITIAL_COVENANT_TIGHTNESS	0.089	0.241
	(0.612)	(0.705)
SECURED (D)	0.513	0.908
	(1.000)	(1.000)
BORROWING_BASE (D)	0.093	0.279
	(0.000)	(0.000)
SWEEP_PROVISION (D)	0.203	0.271
	(0.000)	(0.000)
PERFORMANCE_PRICING (D)	0.714	0.457
	(1.000)	(0.000)

Panel B: Lead lender characteristics

	CDS Firms	Non-CDS Firms
LOAN_VOLUME_PAST_5_YEARS ($ BIL)	672.767	284.486
	(242.110)	(9.206)
LOAN_NUMBER_PAST_5_YEARS	1038.346	512.953
	(485.000)	(129.000)
LOANS_TO_BANKRUPT_FIRMS_PAST_2_YEARS (%)	0.019	0.030
	(0.002)	(0.000)
LEAD_SHARE	20.693	64.541
	(13.731)	(61.178)

Table IA.2: Investment and distance-to-default response to covenant: Robustness violations

This table re-runs the results from Tables 2 and 3 without dropping the firms that do not have the no-restructuring type CDS contracts. Standard errors are clustered at the firm level, and *t*-statistics are displayed in parentheses. *, **, and *** indicate significance greater than 10%, 5%, and 1% , respectively.

Panel A: Investment response

Depvar: INVESTMENT	Full sample			OB sample		
	1	2	3	4	5	6
VIOL×CDS	0.020***	0.015***	0.015***	0.016***	0.018***	0.018***
	(4.64)	(3.10)	(3.10)	(4.70)	(4.37)	(4.22)
VIOL	−0.008**	−0.008**	−0.008**	−0.010***	−0.007***	−0.006***
	(−2.08)	(−2.19)	(−2.17)	(−4.91)	(−3.48)	(−3.39)
CDS	0.003	0.015**	0.014**	0.002	0.008	0.007
	(0.43)	(2.09)	(1.99)	(0.26)	(0.85)	(0.74)
ΣCoeff	0.011**	0.007	0.007	0.006*	0.012***	0.012***
	(2.10)	(1.28)	(1.33)	(1.93)	(3.07)	(3.01)
N	16,897	16,897	16,897	8,948	8,948	8,948
Adj. R^2	0.370	0.410	0.410	0.402	0.432	0.433

Panel B: Distance-to-default response

Depvar: log(DD)	Full sample			OB sample		
	1	2	3	4	5	6
VIOL×CDS	0.111	0.000	0.006	0.085	0.030	0.033
	(1.19)	(0.00)	(0.06)	(0.87)	(0.35)	(0.38)
VIOL	−0.046	−0.035	−0.035	−0.196***	−0.127***	−0.130***
	(−0.91)	(−0.75)	(−0.75)	(−6.24)	(−5.15)	(−5.19)
CDS	0.023	0.151	0.145	0.007	0.086	0.089
	(0.23)	(1.45)	(1.44)	(0.05)	(0.73)	(0.76)
ΣCoeff	0.065	−0.035	−0.029	−0.111	−0.097	−0.097
	(0.63)	(−0.35)	(−0.30)	(−1.17)	(−1.15)	(−1.16)
N	14,556	14,556	14,556	8,450	8,450	8,450
Adj. R^2	0.623	0.680	0.681	0.634	0.690	0.691

Controls for Panels A and B

Firm-Leadlender FE	✓	✓	✓	✓	✓	✓
Calendar Year-Qtr FE	✓	✓	✓	✓	✓	✓
Fiscal Qtr FE	✓	✓	✓	✓	✓	✓
VIOL×Dist-poly.	✓	✓	✓			
Controls		✓	✓		✓	✓

Table IA.3: Firm-level investment and distance-to-default response to covenant violations

This table re-runs the results from Tables 2 and 3 at the firm-quarter level. The firm-leadlender level controls such as syndicate size, relationship strength, lead share, and initial covenant tightness are averaged at the firm level and included as controls. Standard errors are clustered at the firm level, and *t*-statistics are displayed in parentheses. *, **, and *** indicate significance greater than 10%, 5%, and 1% , respectively.

Panel A: Investment response

Depvar: INVESTMENT	Full sample			OB sample		
	1	2	3	4	5	6
VIOL×CDS	0.020***	0.018***	0.017**	0.016***	0.015***	0.015***
	(3.60)	(2.67)	(2.56)	(4.01)	(3.38)	(3.29)
VIOL	−0.008*	−0.007*	−0.007*	−0.012***	−0.007***	−0.007***
	(−1.95)	(−1.83)	(−1.78)	(−5.62)	(−3.34)	(−3.29)
CDS	0.001	0.008	0.009	0.002	0.006	0.008
	(0.09)	(1.28)	(1.46)	(0.33)	(0.92)	(1.14)
ΣCoeff	0.012**	0.010	0.010	0.004	0.008*	0.008*
	(1.99)	(1.50)	(1.46)	(1.21)	(1.94)	(1.92)
N	11,449	11,449	11,449	6,739	6,739	6,739
Adj. R^2	0.316	0.366	0.366	0.358	0.391	0.391

Panel B: Distance-to-default response

Depvar: log(DD)	Full sample			OB sample		
	1	2	3	4	5	6
VIOL×CDS	0.218	0.069	0.077	0.091	0.006	0.004
	(1.50)	(0.57)	(0.64)	(0.89)	(0.06)	(0.04)
VIOL	−0.047	−0.015	−0.016	−0.229***	−0.129***	−0.132***
	(−0.84)	(−0.31)	(−0.32)	(−6.88)	(−4.68)	(−4.77)
CDS	−0.077	0.047	0.027	0.073	0.116	0.121
	(−0.64)	(0.48)	(0.27)	(0.58)	(1.12)	(1.10)
ΣCoeff	0.171	0.054	0.061	−0.138	−0.123	−0.129
	(1.15)	(0.43)	(0.49)	(−1.39)	(−1.33)	(−1.40)
N	9,572	9,572	9,572	5,750	5,750	5,750
Adj. R^2	0.564	0.641	0.641	0.579	0.655	0.656

Controls for Panels A and B

Firm FE	✓	✓	✓	✓	✓	✓
Calendar Year-Qtr FE	✓	✓	✓	✓	✓	✓
Fiscal Qtr FE	✓	✓	✓	✓	✓	✓
VIOL×Dist-poly.	✓	✓	✓			
Firm controls		✓	✓		✓	✓
Avg Firm-lender controls			✓			✓

Table IA.4: Investment and distance-to-default response: Robust bias-corrected estimates

This table presents RDD estimates using robust data-driven statistical inference developed by Calonico et al. (2014). Columns (1) and (2) present the investment response to covenant violations in the presence and absence of CDS trading. Columns (3) and (4) present response of distance-to-default to covenant violations in the presence and absence of CDS trading. RDD estimates are computed using a local polynomial of order two and a triangular kernel within an optimal bandwidth computed using mean-squared error optimal bandwidth selector. RDD estimates in the first row correspond to the conventional RDD estimates with a conventional variance estimator, RDD estimates in the second row correspond to bias-corrected RDD estimates with a conventional variance estimator, and RDD estimates in the third row correspond to bias-corrected RD estimates with a robust variance estimator. Firm-level covariates included in the RDD estimation are the same as in Table 2 for the investment regressions and Table 3 for the distance-to-default regressions. t-statistics are displayed in parentheses. *, **, and *** indicate significance greater than 10%, 5%, and 1% , respectively.

Depvar:	INVESTMENT		DISTANCE-TO-DEFAULT	
Subsample	CDS	No CDS	CDS	No CDS
	(1)	(2)	(3)	(4)
Conventional RDD estimate	−0.002	−0.009**	−0.073	−0.037
	(−0.41)	(−2.35)	(−0.89)	(−0.66)
Bias-corrected RDD estimate	−0.000	−0.011***	−0.089	−0.038
	(−0.10)	(−2.64)	(−1.08)	(−0.68)
Bias-corrected robust RDD estimate	−0.000	−0.011**	−0.089	−0.038
	(−0.08)	(−2.40)	(−1.01)	(−0.60)
N	2,568	14,816	2,298	12,697

Table IA.5: Controlling for other differences between traded CDS and non-traded CDS firms

This table reruns the results from Tables 2 and 3 after including the number of analysts, percentage of institutional ownership, and stock illiquidity as additional controls. The sample size drops by about half after including these controls. Panel A and Panel B estimate regressions for the response of investment and distance-to-default to covenant violations similar to Table 3 and Table 2. Standard errors are *double* clustered at the firm and lead-lender level, and *t*-statistics are displayed in parentheses. *, **, and *** indicate significance greater than 10%, 5%, and 1% , respectively.

Panel A: Investment response

Depvar: INVESTMENT	1	2	3
VIOL×CDS	0.013*	0.016**	0.014**
	(1.94)	(2.50)	(2.42)
VIOL	−0.012**	−0.017	−0.006
	(−2.12)	(−1.23)	(−1.04)
CDS	0.011	0.011	0.010
	(1.55)	(1.53)	(1.45)
ANALYSTS (#, log)	−0.000		
	(−0.13)		
VIOL×ANALYSTS (#, log)	0.004		
	(1.38)		
INSTITUTIONAL_HOLDING (%, log)		0.004	
		(1.36)	
VIOL×INSTITUTIONAL_HOLDING (%, log)		0.002	
		(0.61)	
STOCK_ILLIQUIDITY			−0.005
			(−1.14)
VIOL×STOCK_ILLIQUIDITY			−0.010**
			(−2.09)
Firm-Leadlender FE	✓	✓	✓
Calendar Year-Qtr FE	✓	✓	✓
Fiscal Qtr FE	✓	✓	✓
VIOL×Dist-poly.	✓	✓	✓
Controls	✓	✓	✓
ΣCoeff	0.001	−0.001	0.008
	(0.07)	(−0.04)	(1.05)
N	7,145	7,145	7,145
Adj. R^2	0.494	0.494	0.495

Panel B: Distance-to-default response

Depvar: log(DD)	1	2	3
VIOL×CDS	−0.125	−0.059	−0.105
	(−1.18)	(−0.60)	(−1.09)
VIOL	−0.011	−0.038	0.082
	(−0.16)	(−0.22)	(1.29)
CDS	0.228**	0.212**	0.222**
	(2.43)	(2.02)	(2.36)
ANALYSTS (#, log)	−0.007		
	(−0.39)		
VIOL×ANALYSTS (#, log)	0.055*		
	(1.87)		
INSTITUTIONAL_HOLDING (%, log)		0.123***	
		(2.94)	
VIOL×INSTITUTIONAL_HOLDING (%, log)		0.018	
		(0.42)	
STOCK_ILLIQUIDITY			−0.370***
			(−3.80)
VIOL×STOCK_ILLIQUIDITY			−0.192**
			(−2.05)
Firm-Leadlender FE	✓	✓	✓
Calendar Year-Qtr FE	✓	✓	✓
Fiscal Qtr FE	✓	✓	✓
VIOL×Dist-poly.	✓	✓	✓
Controls	✓	✓	✓
ΣCoeff	−0.135	−0.096	−0.023
	(−1.00)	(−0.45)	(−0.20)
N	6,526	6,526	6,526
Adj. R^2	0.668	0.671	0.677

Table IA.6: Correlations between Loan CDS and Bond CDS spreads spreads

This table presents the regression results of Loan CDS spreads on Bond CDS spreads. Both Loan and Bond CDS spreads have a tenor of 5 years, are of the no-restructuring contract type, and are associated with debt issued by U.S. firms with a senior lien. Standard errors are clustered at the firm and *t*-statistics are displayed in parentheses. *, **, and *** indicate significance greater than 10%, 5%, and 1% , respectively.

Depvar: Loan CDS spread	(1)	(2)
BOND_CDS_SPREAD	0.488***	0.414***
	(13.15)	(8.67)
Firm FE		✓
Year-month FE		✓
N	20,831	20,831
Adj. R^2	0.371	0.673